Abstract

The invention is a system and method for neutralizing fluid chemical waste products that result from a chemical production process and are collected from the production line. The invention comprises a pyrolysis/reaction chamber into which the fluid chemical waste is pumped through an atomizer. The jet of small droplets of liquid waste that is formed by the atomizer effectively contacts the plasma stream created by a plasma torch. When the droplets contact the plasma stream the molecules of the waste from which the droplets are composed are dissociated into atoms and/or ions. These atoms and ions move out of the immediate region of the plasma stream and recombine to form a mixture of product gases which exits the chamber. The product gases then enter a post-pyrolysis subsystem, which is designed to neutralize and/or collect the components comprising the mixture of product gases.